

SCG300-10-001

NEC Express5800/ft series
System Configuration Guide

Model R320a-E4/M4 (VMware)

August 2010

NEC

IT Network Global Solutions Division

Table of Contents

- 1. System Configuration**
- 2. Local Procurement**
 - 2.1. Hardware/software components**
 - 2.2. Power cord**
- 3. Hardware List**



NEC Express5800/R320a-E4/M4 System Configuration Guide

- Quad-Core Intel Xeon Processor supported
- 4U Rackmount form factor
- VMware vSphere4 supported



Specification Overview

Model		Express5800/R320a-E4	Express5800/R320a-M4	Redundancy
Product Number		N8800-149F	N8800-150F	
CPU ^{*1}	CPU	Intel® Xeon® Processor E5504	Intel® Xeon® Processor X5570	Redundant
	Clock Speed	2GHz	2.93GHz	
	No. of CPU (Standard/Max)	1 / 2		
	L3 Cache	4MB	8MB	
	Core (C)/ Thread (T) (1CPU)	4C/4T	4C/8T	
Chipset		Intel® 5500 + GeminiEngine™ (FPGA)		Redundant
Memory ^{*1}	Standard	Memory less		Redundant
	Minimum	4GB (2GBDIMM x1x2)		
	Maximum	96GB (8GBDIMM x3x4)		
	Memory type	DDR3 SDRAM DIMM, Registered		
	Operating frequency (Max)	800MHz	1066MHz	
	Error detection/correction	ECC, x4 SDDC		
Storage	Drive bay	Standard capacity	-	Redundant
		Maximum capacity	2.5 inch HDD: SAS 2.4TB (8 x300GB) ^{*2}	
		Hot plug	Supported	
	Interface and RAID		SAS 3Gb/s: RAID1 (Standard)	
	Optical Disk Drive		DVD-RAM drive ^{*3}	
	FDD		External drive (option)	
Expansion slot	Supported slot	2 x PCI Express 1.0 (x4 lane, x8 socket) ^{*4}	2 x PCI Express 2.0 (x4 lane, x8 socket) ^{*4} + 2 x PCI Express 1.0 (x4 lane, x8 socket) ^{*4}	Redundant
		Integrated in Server Management Controller / 32MB		
Graphics	Installation Type / Video RAM	16,777,216-color: 800x600, 1024x768 65,536-color: 1280x1024		
	Color ,Resolution [dot]			
External Interface		1 x Analog RGB (Mini D-Sub15 pin, 1x Rear), 4 x USB2.0 (1x Front, 3x Rear)		
		2x 1000BASE-T LAN connector (1000BASE-T/100BASE-TX, RJ-45, 2x Rear) ^{*4} , 1 x Management LAN connector (100BASE-TX/10BASE-T, RJ-45, 1x Rear) ^{*4}		Redundant
External dimension (W x D x H)		483x736x178mm (Not including protrusion)		
Weight (Min / Max)		46kg/52kg		
Power Supply		AC100V-240V±10%, 50/60Hz±3Hz, 2 x AC inlets		Redundant
Power consumption (Max config, high load)		1400VA/1390W		
Operation Condition (Temperature, Humidity)		During operation: 10 to 35°C / 20 to 80% (non condensation), When stored: -10 to 55°C / 20 to 80% (non condensation)		
Included Accessories		EXPRESSBUILDER (ESMPRO/ServerManager(for Windows)), User's Guide, User's Guide (Setup), Key		
Supported OS		VMware vSphere4 update1		

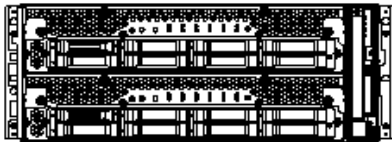
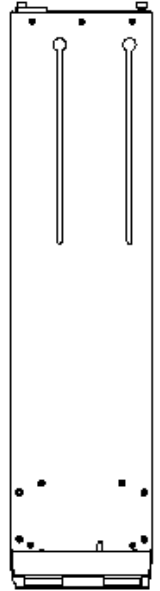
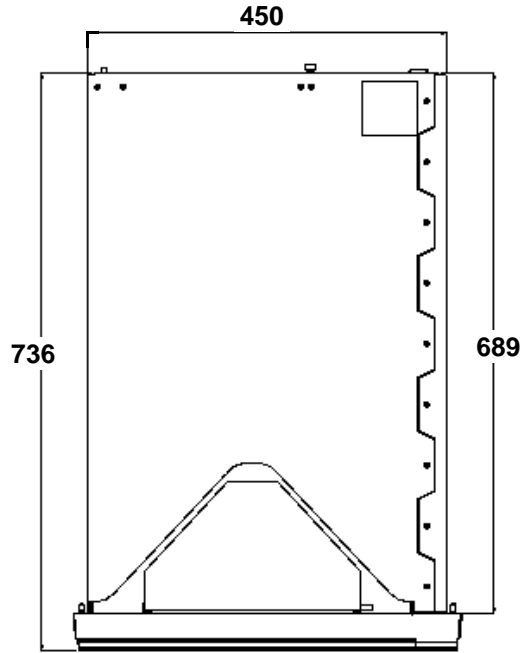
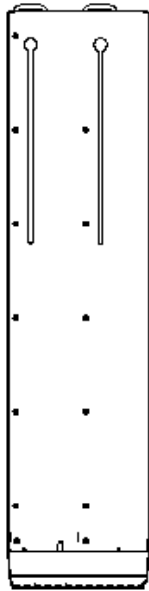
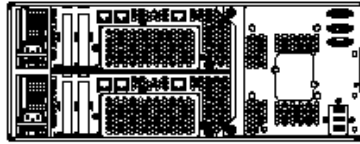
*1 Specifications are for each CPU/IO module. Actual number is double that is specified due to duplication

*2 Logical Capacity

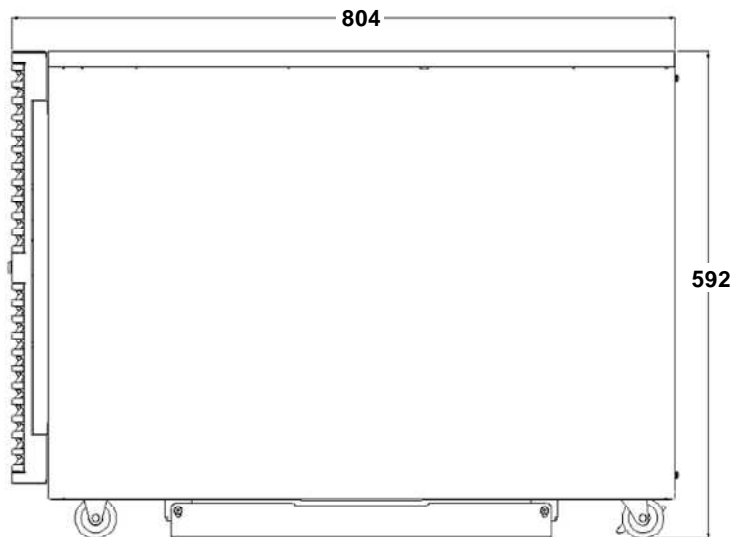
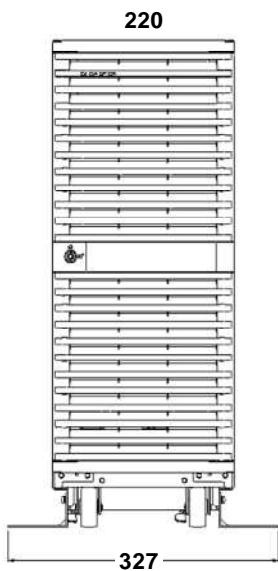
*3 Writing function is not supported

*4 The number of Slots in each CPU/IO module

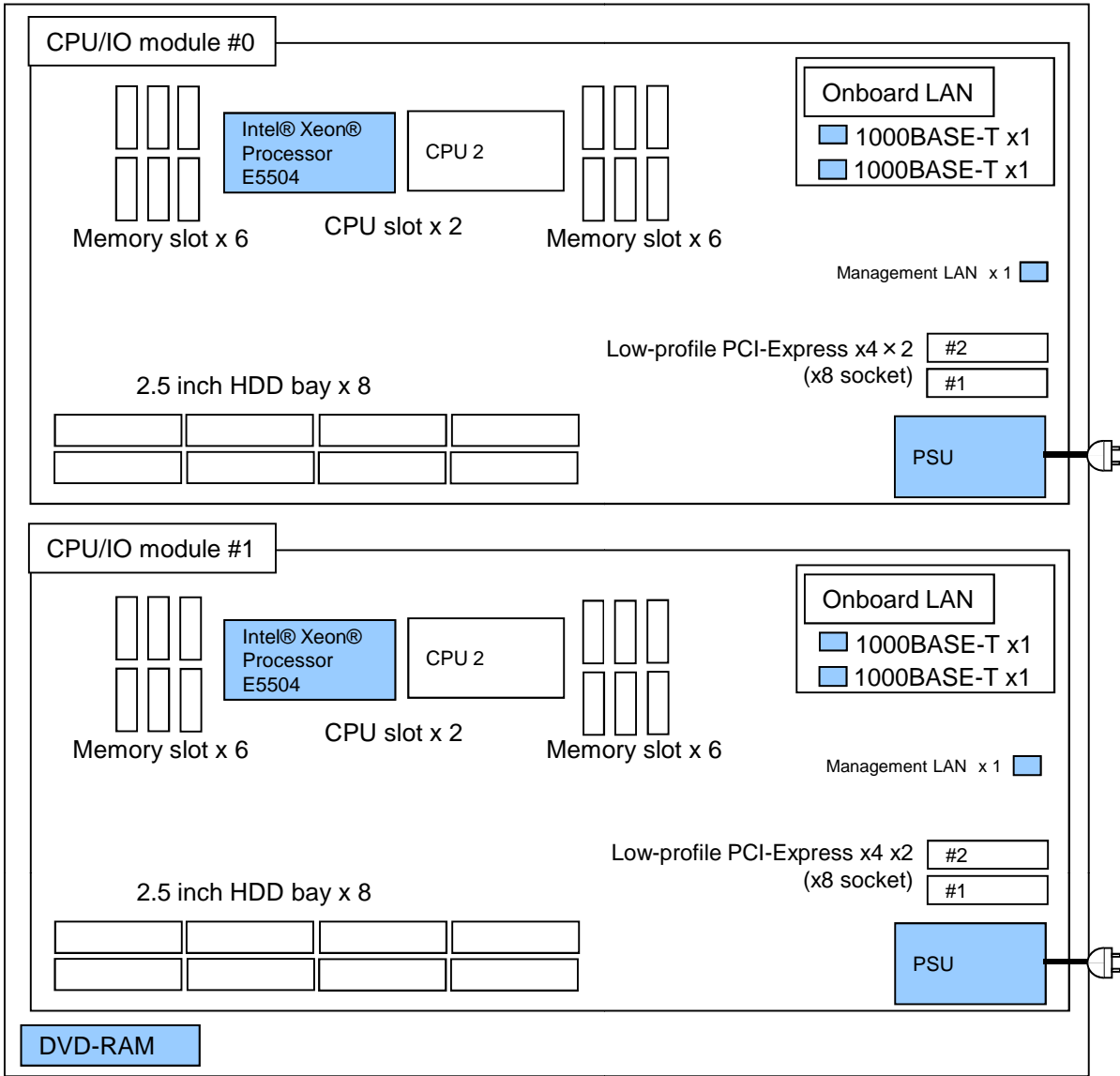
Outward



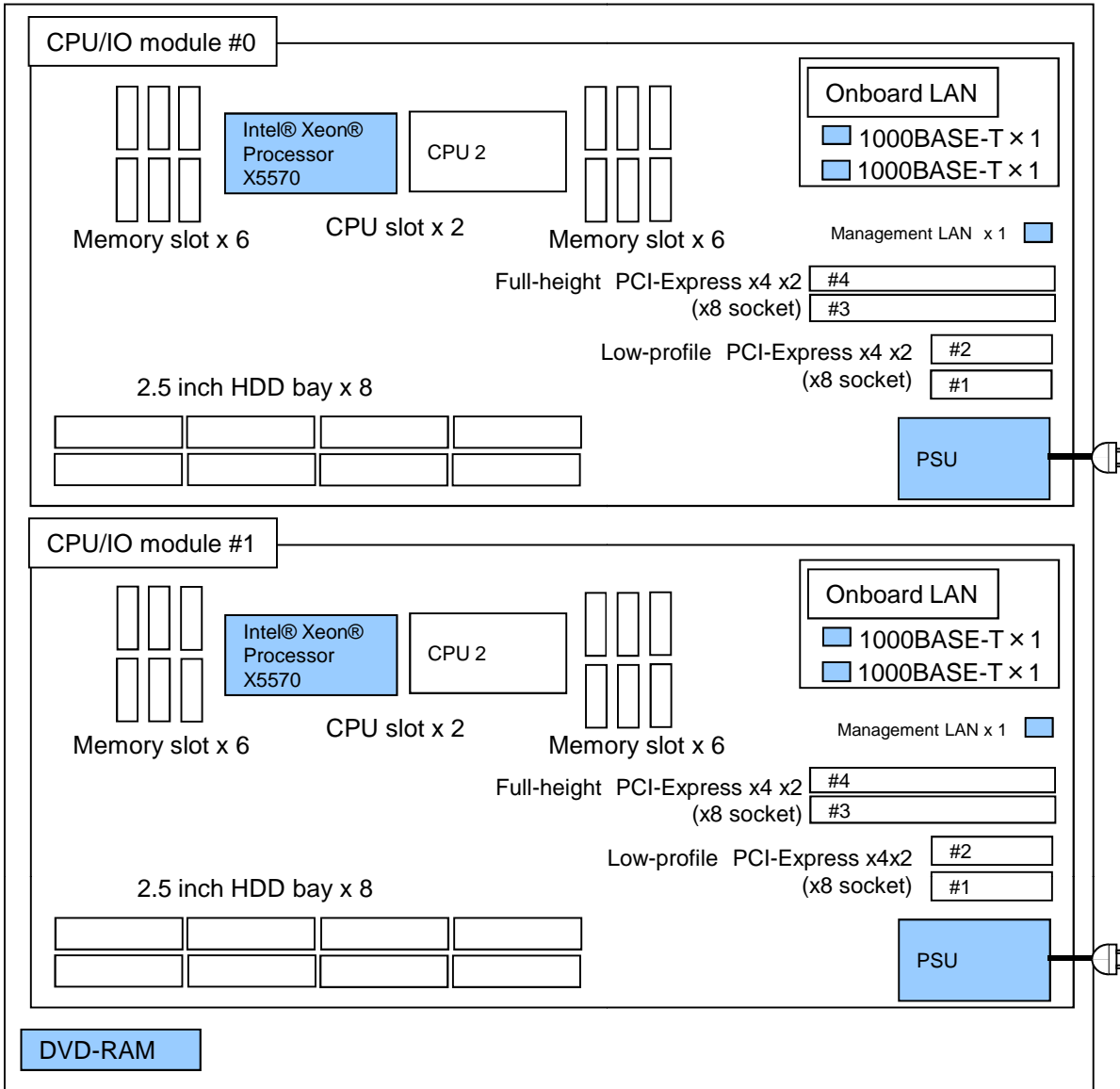
Tower conversion kit



R320a-E4 Quick configuration sheet:



R320a-M4 Quick configuration sheet:



Notes for configuring FT server with VMware

The following are needed to configure FT server VMware model.

1. FT server main unit

Select main unit and add optional CPU, Memory, HDD, PCI cards, etc.

N8800-149F
Express5800/R320a-E4

N8800-150F
Express5800/R320a-M4

2. VMware license

Select VMware license and optional license.

VMware vSphere 4 Essentials
for 3 hosts

VMware vSphere 4 Essentials
Plus for 3 hosts

VMware vSphere 4 Standard
for 1 processor

VMware vSphere 4 Advanced
for 1 processor

VMware vSphere 4 Enterprise
for 1 processor

VMware vSphere 4 Enterprise
Plus for 1 processor

3. NEC Storage

If needed, external storage can be connected for SAN boot and data disk.
Procure as system requirement.

D3-10

D4-30

D8-10/20/30

E1-10

4. UPS

Procure as needed. (Local procurement)

5. Guest OS license

6. VMware vSphere Client

A dedicated terminal is required for management of VMware vSphere 4 on the FT server. (Local procurement)

7. NEC Storage management server

Required when using NEC Storage.

8. Backup server

Dedicated server is recommended for backup.

9. NEC ESM PRO Agent

Download from ITPF portal site.


FT server (main unit)

Low-End rack mount

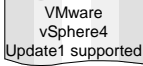
N8800-149F NEC Express5800/R320a-E4 (4C/E5504-VM) Memory less, HDD less

Intel® Xeon® Processor E5504 (2.0GHz) x 1, 4MB 3rd cache, QPI speed 4.8GT/s
Memory less (Mandatory option, Minimum 4GB, Max 96GB), HDD less (SAS HDD),
DVD-RAM drive x1, 1000BASE-T 2ch as standard, PCI slot x2,
EXPRESSBUILDER (NEC ESM^{PRO} Manager included)

Intel® Xeon®
Processor E5504



VMware
vSphere4
Update1 supported




Mid-Range rack mount

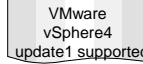
N8800-150F NEC Express5800/R320a-M4 (4C/X5570-VM) Memory less, HDD less

Intel® Xeon® Processor X5570 (2.93GHz) x1, 8MB 3rd cache, QPI speed 6.4GT/s
Memory less (Mandatory option, Minimum 4GB, Max 96GB), HDD less (SAS HDD),
DVD-RAM drive x1, 1000BASE-T 2ch as standard, PCI slot x4,
EXPRESSBUILDER (NEC ESM^{PRO} Manager included)

Intel® Xeon®
Processor X5570



VMware
vSphere4
update1 supported



Processors

[Note]

- A pair of Quad-Core Xeon Processor is installed as standard.
- CPU kit contains a pair of the processors to install both CPU/IO Module #0 and CPU/IO Module #1.

Processor Sockets
2 logical sockets

For R320a-E4

Socket #0: Standard Processor
Quad-Core Intel Xeon Processor E5504, 2 GHz, 4 MB L3 Cache, QPI 4.8GT/s as standard
Socket #1: Additional Processor
N8801-041 CPU Kit(4C/E5504) Quad-Core Intel Xeon E5504, one pair

For R320a-M4

Socket #0: Standard Processor
Quad-Core Intel Xeon Processor X5570, 2.93 GHz, 8 MB L3 Cache, QPI 6.4GT/s as standard
Socket #1: Additional Processor
N8801-042 CPU Kit(4C/X5570) Quad-Core Intel Xeon X5570, one pair

Memory

[Note]

- 8GB or more memory is recommended.

DIMM Sockets
12 logical sockets

Product List

DDR3-1066 Registered DIMM:

N8802-041 2GB Memory kit 2X 2 GB DIMM (1x 2GB/module)
N8802-042 12GB Memory kit 6X 4 GB DIMM (3x 4GB/module)
N8802-043 24GB Memory kit 6X 8 GB DIMM (3x 8GB/module)

Memory configuration pattern

CPU	Total MEM	DIMM Slot number													
		Standard CPU side						2nd CPU side							
		1	2	3	4	5	6	12	11	10	9	8	7		
1	4GB	2		2											
	6GB	2		2		2									
	8GB	2	2	2		2									
	10GB	2	2	2	2	2									
	12GB	2	2	2	2	2	2								
	12GB	4		4		4									
	24GB	4	4	4	4	4	4								
	24GB	8		8		8									
	36GB	8	4	8	4	8	4								
	48GB	8	8	8	8	8	8								
2	4GB*1	2													2
	6GB	2		2		2									
	8GB	2		2		2					2				2
	10GB	2	2	2	2	2									
	12GB	2		2		2				2		2			2
	16GB	2	2	2		2				2		2	2	2	2
	20GB	2	2	2	2	2				2	2	2	2	2	2
	24GB	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	24GB	4		4		4				4		4		4	
	36GB	4	2	4	2	4	2	2	4	2	4	2	4	2	4
	48GB	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	48GB	8		8		8				8		8		8	
	72GB	8	4	8	4	8	4	4	8	4	8	4	8	4	8
	96GB	8	8	8	8	8	8	8	8	8	8	8	8	8	8

*1: Memory interleave is valid except 2GB DIMM per CPU configuration.

Hard disk drives

[Note]

- Up to 16 hard disk drives can be installed in the system.
- Be sure to install by double of hard disk drives in order to have the RAID-1 configuration. Also both of the hard disk drives must have same capacity and rotational speed.

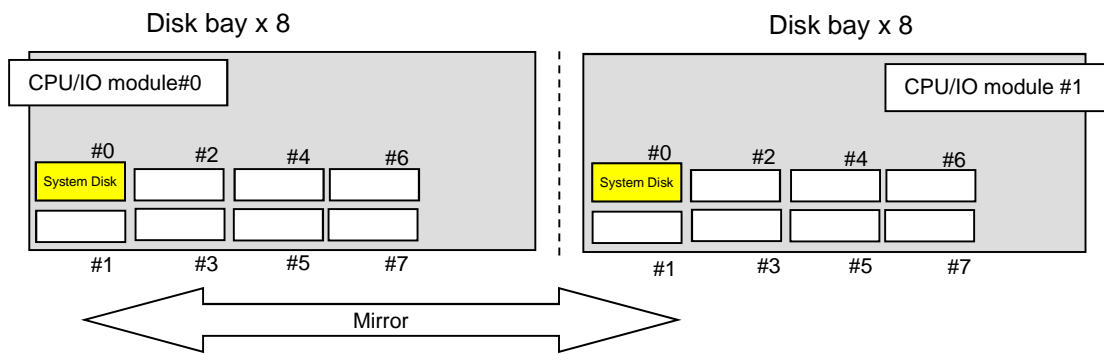
2.5 INCH
Disk bays

16 hot-swap
drive bays

Product List

2.5 inch SAS:

N8850-038	146.5GB 10k rpm SAS HDD	1X 146.5 GB HDD, w/ carrier
N8850-039	300GB 10k rpm SAS HDD	1X 300 GB HDD, w/ carrier
N8850-040	73.2GB 15k rpm SAS HDD	1X 73.2 GB HDD, w/ carrier
N8850-041	146.5GB 15k rpm SAS HDD	1X 146.5 GB HDD, w/ carrier



The 73.2 GB HDD is recommended to install as system drive in order to reduce the time to resynchronize.

* The mirroring function copies only changed files to resynchronize when replacing CPU/IO module, etc. in order to save time. However, all data in the HDD need to be copied when replacing HDD to new one.

Server Management

Onboard
RAS chip

R320a-E4/M4 have the enhanced remote management function "EXPRESSSCOPE Engine2" as standard.



EXPRESSSCOPE Engine 2 (Standard)

*There is Management LAN port (100/10BASE-TX) on each CPU/IO module.

LCD Monitor

[Note]

- A monitor is required for maintenance.

D-sub 15 pin Interface

1 connector

Monitor:

15 INCH LCD Local procurement

Input devices

USB Interface

3 connector

Keyboard: N8870-002AF	104 keyboard	1.8m cable length
Mouse: N8870-010A	Mouse	1.8m cable length
Extension cable: K410-177(1A)	USB cable 1.5m	

Floppy disk drive

[Note]

- The floppy drive is mandatory option due to maintenance.
- The USB extension cables can be used up to 1.5 m length.
- A tray to install the floppy disk drive is necessary to install in the rack mount system.

Product List

USB Interface

3 connector

Floppy disk drive : N8160-81	External FDD	2mode (720 KB/ 1.44 MB), 0.9m cable length
Extension cable: K410-177(1A)	USB cable 1.5m	

Optical disk drive

[Note]

- Writing function is not supported.
- Optical disk drive is not accessible after installing ft Server Control Software.
If you need to access the Optical disk drive, use the following command for temporary use.
/opt/ft/sbin/enable-usb-storage
- Using Optical disk drive is not recommended.

USB Interface
1 internal connector

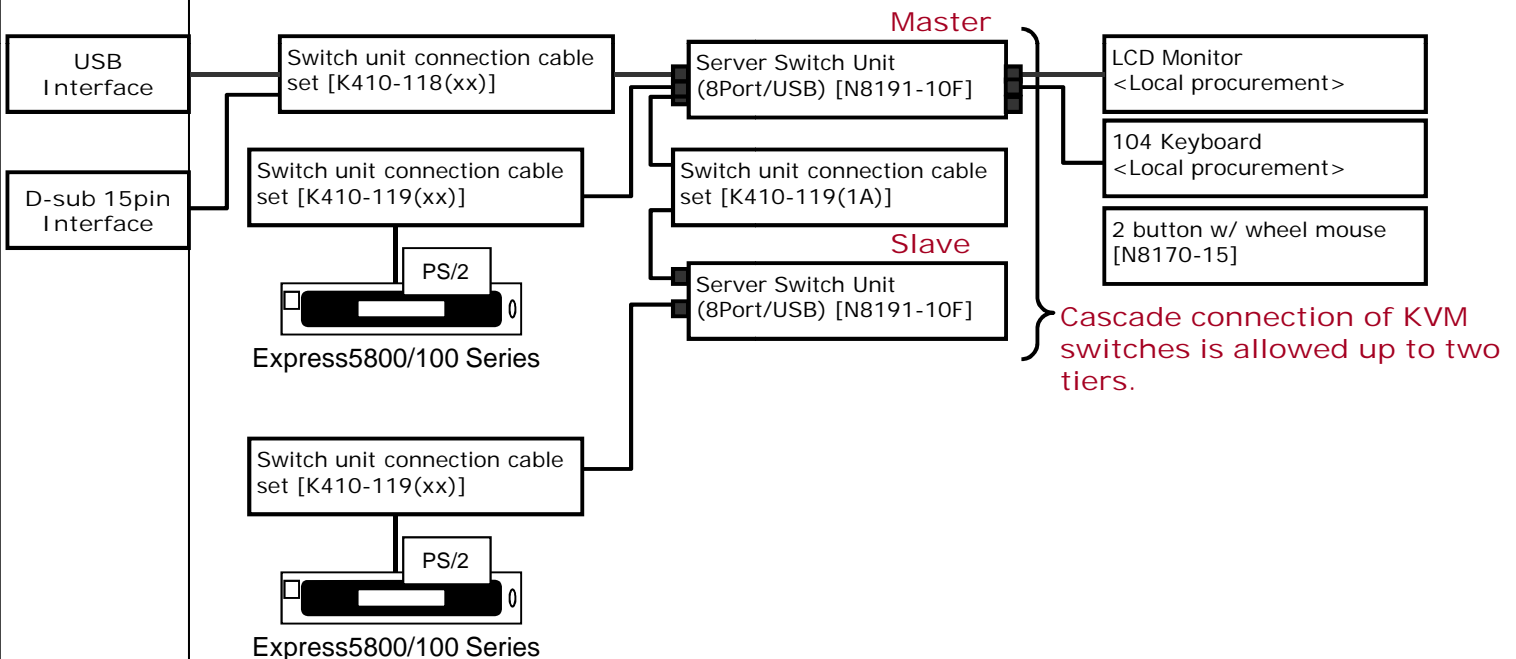
Optical disk drive:
Slimline DVD-RAM drive included in the front panel as standard

KVM switch

[Note]

- ft Server must be connected to the master KVM switch when cascade connection.
- Be sure to apply PS/2 typed keyboard/Mouse to connect to KVM switch.
- Updating the keyboard information is required after the installation has been complete, because the operating system recognizes the keyboard as a 101 keyboard.
- Reconnect the cables or reset the KVM switch if the keyboard and mouse are out of function after CPU/IO module fail over.

Sample configuration

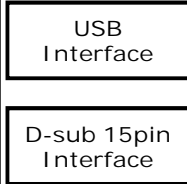


Cascade connection of KVM switches is allowed up to two tiers.

Product List

KVM switch:	Server Switch Unit(8Server/USB)	1U or Desktop
N8191-10F		
Cables:		
K410-118(1A)	Switch unit connection cable set	KVM unit – Server, USB, 1.8 m
K410-118(03)	Switch unit connection cable set	KVM unit – Server, USB, 3 m
K410-119(1A)	Switch unit connection cable set	KVM unit – Server, PS/2, 1.8 m
K410-119(03)	Switch unit connection cable set	KVM unit – Server, PS/2, 3 m
K410-104A(03)	Display/Keyboard extension cable	KVM unit – Keyboard/Mouse, PS/2, 3 m
Keyboard/Mouse:		
	104Keyboard	PS/2
N8170-15	2 button w/ wheel mouse	PS/2

17 inch LCD console unit



Switch Unit Connection Cable Set (1.8m/3m/5m)
 [K410-118(1A)] (1.8m)
 [K410-118(03)] (3m)
 [K410-118(05)] (5m)

•Up to eight servers can be connected directly to the LCD console unit. Use optional Server Switch Units to connect more than eight servers.

LCD Console Unit



A 17-inch LCD, keyboard, mouse, and Server Switch Unit (x8) are integrated into the 1U LCD Console Unit.

- 17-inch LCD Console Unit (1U/8port) [N8143-69F]
 Consists of the following components:

17-inch LCD
 1280x1024 max. Full color

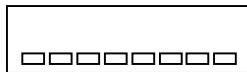
Keyboard (no ten-key numeric keypad)

Optical Mouse

Server Switch Unit
 - Supports up to eight servers.
 - Cascade connection of KVM switches is allowed up to two tiers.

Switch Unit Connection Cable Set (1.8m)
 [K410-119(1A)]

Server Switch Unit



- Server Switch Unit (8 ports) [N8191-10F]

•The 17-inch LCD Console Unit [N8143-69F] allows the connection of up to 64 servers by cascading eight Server Switch Units [N8191-10F].

•The 17-inch LCD Console Unit [N8143-69F] does not support other SSUs [N8191-09F/-09AF].

Tower conversion kit

[Note]

- No tape device can be connected to R320a with Tower conversion kit without rack.



N8843-003 Tower conversion kit
23 inch height pedestal rack with Front bezel for R320a
327(W)x804(D)x592(H)mm, 26.5kg (including stabilizer)

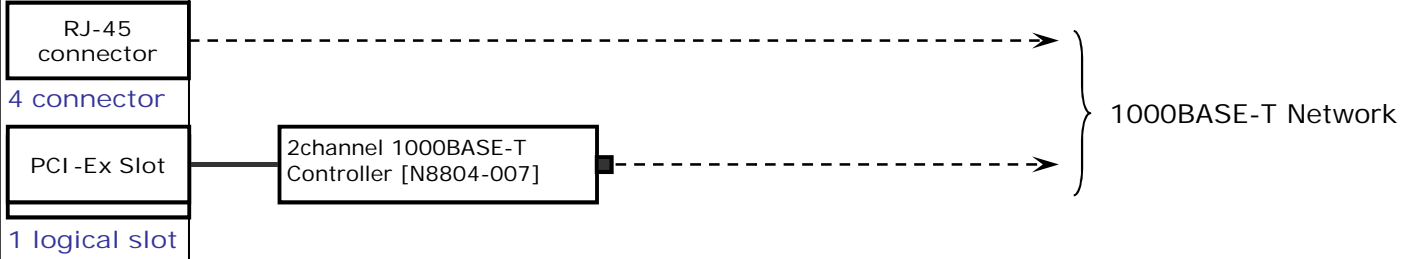
Network (LAN)

[Note]

- Be sure to connect four physical LAN interfaces to the network HUB. Each of two pairs of 1000BASE-T on the CPU/IO module is redundant configuration.
- Be sure to install the network cards on the same PCI slot# of each CPU/IO module.

Configuration

1000BASE-T :



Product List

1000BASE-T : N8804-007	2-channel 1000BASE-T controller set	a pair of controller
---------------------------	-------------------------------------	----------------------

VMware license

[Note]

- The R320a VMware models support VMware vSphere 4 Update 1.

- VMware vSphere 4 license for Small Business

- UL1610-003-GL VMware vSphere 4 Essentials Bundle for 3 hosts (Max 2 CPUs per host and 6 cores per CPU) *1
- UL1610-004-GL VMware vSphere 4 Essentials Plus Bundle for 3 hosts (Max 2 CPUs per host and 6 cores per CPU) *2

- *1: ESX license for up to 3 Physical servers (Max 2 CPUs each) and VMware vCenter Server license for 3 ESX servers.
- *2: ESX license for up to 3 Physical servers (Max 2 CPUs each) and VMware vCenter Server license for 3 ESX servers. Also, Data Recovery and HA license for 6 CPUs included.

- VMware vSphere 4 license for Medium and Large-sized Business

- UL1610-005-GL VMware vSphere 4 Standard for 1 processor (Max 6 cores per CPU) *3
- UL1610-006-GL VMware vSphere 4 Advanced for 1 processor (Max 12 cores per CPU) *3
- UL1610-007-GL VMware vSphere 4 Enterprise for 1 processor (Max 6 cores per CPU) *3
- UL1610-008-GL VMware vSphere 4 Enterprise Plus for 1 processor (Max 12 cores per CPU) *3

- *3: VMware vCenter Server license is not included. So, you need to order separately.

- VMware vSphere 4 vCenter Server

- UL1610-009-GL VMware vCenter Server 4 Foundation for vSphere up to 3 hosts
- UL1610-00A-GL VMware vCenter Server 4 Standard for vSphere (Includes Orchestrator and Linked Mode)

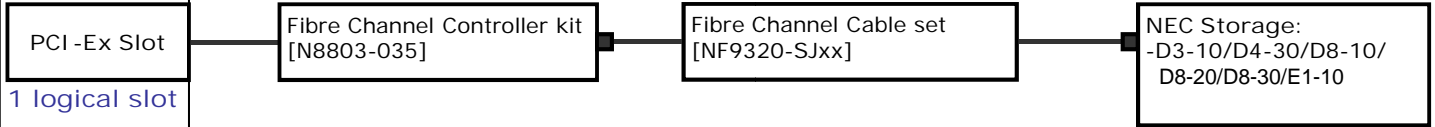
When you order VMware license, please also order below support product.

- UL1610-003-GL(S) 1 year support of VMware vSphere 4 Essentials Bundle for 3 hosts
- UL1610-004-GL(S) 1 year support of VMware vSphere 4 Essentials Plus Bundle for 3 hosts
- UL1610-005-GL(S) 1 year support of VMware vSphere 4 Standard for 1 processor (Max 6 cores per CPU)
- UL1610-006-GL(S) 1 year support of VMware vSphere 4 Advanced for 1 processor (Max 12 cores per CPU)
- UL1610-007-GL(S) 1 year support of VMware vSphere 4 Enterprise for 1 processor (Max 6 cores per CPU)
- UL1610-008-GL(S) 1 year support of VMware vSphere 4 Enterprise Plus for 1 processor (Max 12 cores per CPU)
- UL1610-009-GL(S) 1 year support of VMware vCenter Server 4 Foundation for vSphere up to 3 hosts
- UL1610-00A-GL(S) 1 year support of VMware vCenter Server 4 Standard for vSphere (Includes Orchestrator and Linked Mode)

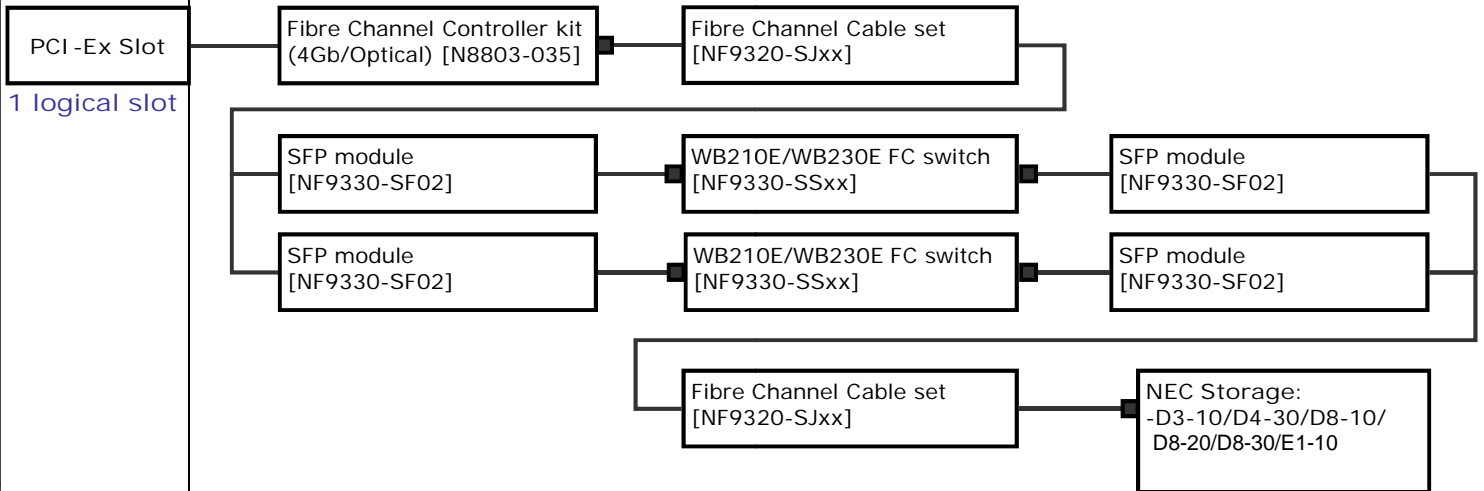
Storage

Configuration

Direct connection :



Connection via Fiber Channel switch:



Product List

Fibre Channel controller:

N8803-035 Fibre Channel controller kit (4Gb/Optical) A pair of controller, PCI Express x8

Fibre Channel switch/SFP module:

NF9330-SS07E WB210E Fibre Channel switch 8 ports

NF9330-SS08E WB230E Fibre Channel switch 16 ports

NF9330-SF02 SFP module

Cables:

NF9320-SJ01E Fibre Channel Cable set A pair of cable, 5 m

NF9320-SJ02 Fibre Channel Cable set A pair of cable, 10 m

NF9320-SJ03 Fibre Channel Cable set A pair of cable, 20 m

NF9320-SJ04 Fibre Channel Cable set A pair of cable, 50 m

Supported PCI cards and installable slots**R320a-E4**

Product Code		CPU/IO module				Notes
		Low-Profile		Full-Height		
		Slot#1	Slot #2	Slot #3	Slot #4	
N8804-007	1000BASE-T 2ch board kit	X	X	—	—	*1
N8803-035	Fibre Channel controller	X	X	—	—	*1

*1: Be sure to install a pair of controller on the same slot# of both of CPU/IO modules

R320a-M4

Product Code		CPU/IO module				Notes
		Low-Profile		Full-Height		
		Slot#1	Slot #2	Slot #3	Slot #4	
N8804-007	1000BASE-T 2ch board kit	X	X	X	X	*1
N8803-035	Fibre Channel controller	X	X	X	X	*1

*1: Be sure to install a pair of controller on the same slot# of both of CPU/IO modules

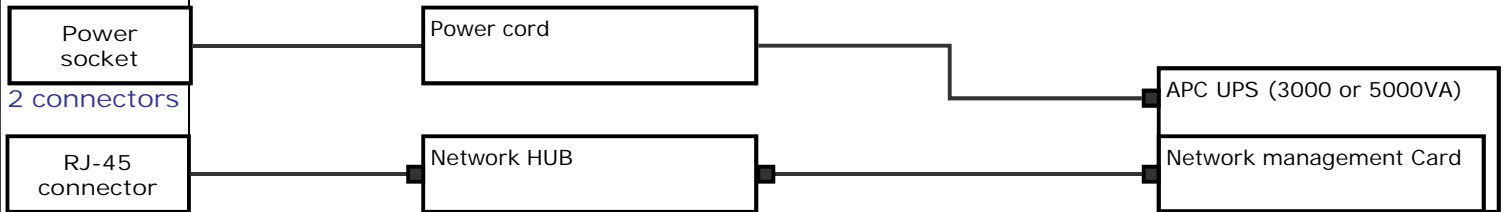
UPS

[Note]

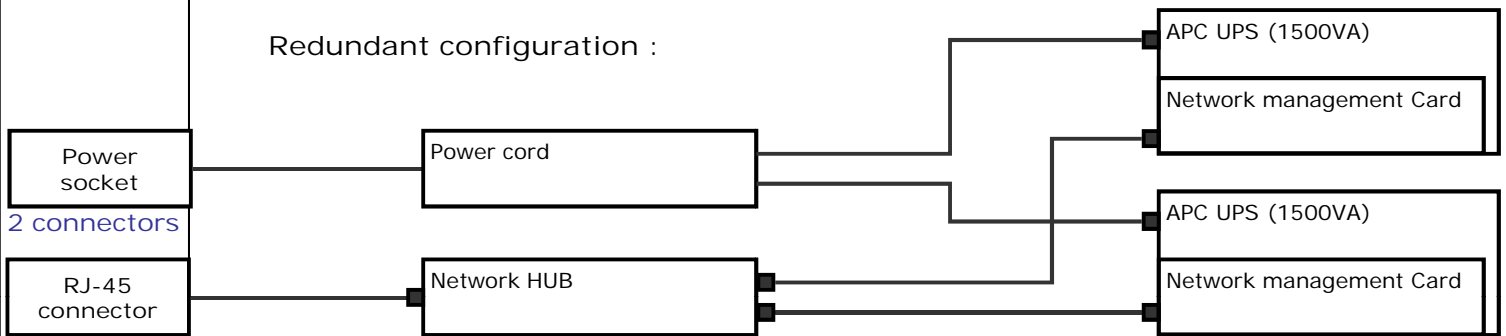
- Be sure to manage the UPS via network with Network shutdown software. The UPS can not be managed via serial port and USB port with Power Chute Plus software.

Configuration

Non-Redundant configuration :



Redundant configuration :



Product List

UPS :	
APC Smart-UPS 1500VA RM 2U	980 Watts / 1500 VA
APC Smart-UPS 3000VA RM 3U	2700 Watts / 3000 VA
APC Smart-UPS RT 5000VA 208V w/ 208V to 120V 2U Step-Down Transformer	3500 Watts / 5000 VA, 5U
Option :	
Network management Card	The card managing the UPS via network, 1X 100BASE-T
Software :	
PowerChute Network Shutdown	Management software managing the UPS via network

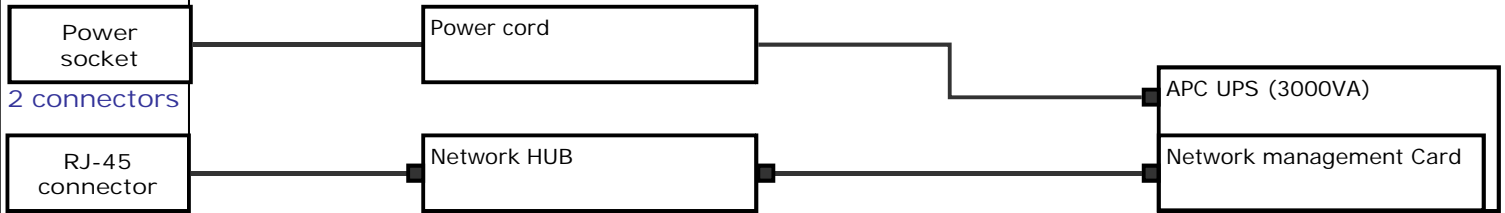
UPS (When using Tower conversion kit)

[Note]

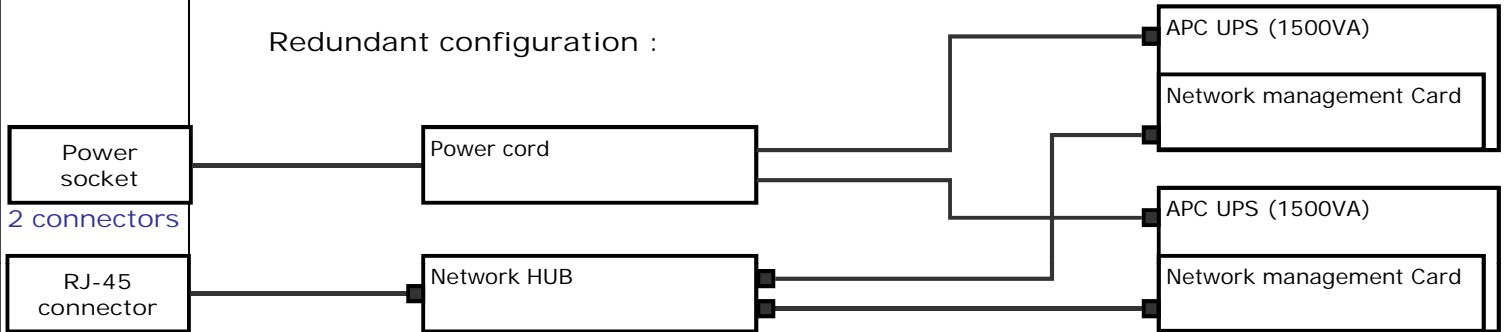
- Be sure to manage the UPS via network with Network shutdown software. The UPS can not be managed via serial port and USB port with Power Chute Plus software.

Configuration

Non-Redundant configuration :



Redundant configuration :



Product List

UPS :	
APC Smart-UPS 3000VA	2700 Watts / 3000 VA
APC Smart-UPS 1500VA	980 Watts / 1500 VA
Option :	
Network management Card	The card managing the UPS via network, 1X 100BASE-T
Software :	
PowerChute Network Shutdown	Management software managing the UPS via network

Guest OS license

[Note]

- Guest Operating Systems supported on NEC Express5800/ft series are the same as other general purpose servers.

VMware vSphere Client

[Note]

- For maintenance of VMware ESX on the FT server, a dedicated terminal which satisfies the following requirements is needed.

CPU	266MHz or faster x86 processor (Intel, AMD) (500MHz recommended)
Memory	Minimum 200MB
Disk	1GB free disk space for a complete installation, which includes the following components: - Microsoft .NET 2.0 - Microsoft .NET 3.0 SP1 - Microsoft Visual J# - vSphere Client 4.0 - vSphere Host Update Utility 4.0 You must also have 400MB free on the drive that has your %temp% directory. If all of the prerequisites are already installed, 300MB of free space is required on the drive that has your %temp% directory, and 450MB is required for the vSphere Client 4.0.
OS	Windows Server 2003 SP1 32bit Windows Server 2003 SP2 32bit Windows Server 2003 R2 32bit Windows Server 2003 64bit Windows Server 2008 Standard Windows Server 2008 Enterprise Windows Server 2008 Datacenter Windows Server 2008 Standard 64bit Windows Server 2008 Enterprise 64bit Windows Server 2008 Datacenter 64bit Windows XP Professional SP2 Windows XP Professional SP3 Windows XP Professional SP2 64bit Windows Vista Business Windows Vista Enterprise Windows Vista Business 64bit Windows Vista Enterprise 64bit
NIC	1Gbps recommended

NEC Storage management server

[Note]

- Required for NEC Storage Manager for NEC storage management.
-

Backup server

[Note]

- Dedicated server for data backup is recommended
-

NEC ESMPRO Agent

[Note]

- R320a VMware model does not include the NEC ESMPRO Agent for VMware. Download from ITPF portal site.
-

2. Local Procurement

2.1 Hardware/software components

The following table shows the status whether the local procurements are allowed according to each component. You need to purchase the components provided by NEC, if the status indicates 'NO'.

Components	Status
CPU	No
Memory	No
Hard disk drive	No
LAN controller	No
KVM switch(USB,PS/2 port)	No
Keyboard (USB)	No
Mouse (USB)	Yes
Server Rack	Yes
UPS	Yes
UPS management software	Yes

2.2 Power cord

No power cord is attached to the products listed below. You must obtain the cables from local suppliers. Note that the cords to be purchased should meet the specifications below.

And to use the server switch unit, you may have to purchase a local AC adapter or power cord, depending on the country you live in. The connector type required for the AC adapter is IEC320.

Product code	Product name	Standard Input	
		100-120VAC	220-240VAC
N8800-149F	Express5800/R320a-E4	12.0A	6.0A
N8800-150F	Express5800/ R320a-M4	12.0A	6.0A
N8191-10F	Server Switch Unit(8Server/USB)	0.12A	0.08A